

Applicant respectfully traverses and submits that the rejection cannot be maintained. Also, Applicant notes that the statements in the Office Action are inconsistent. On page three, the Office Action states that the '334 reference "does not disclose a method in which a second plasma etch is performed that includes HBr and nitrogen." But on page five, the Office Action states that the '334 reference does teach "a second etching stage in which the process gases include HBr and nitrogen," and the cited portion of the '334 reference (col. 17, lines 24-33) does not support this statement.

Contrary to the '334 reference the instant invention uses a small amount of nitrogen in the etch gas compositions for a use (preventing notching in a trench) not disclosed in the prior art. MPEP § 2112.02 clearly states that "The discovery of a new use for an old structure based on unknown properties of the structure might be patentable to the discoverer as a process of using." It further provides that "[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the 'subject matter as a whole' which should always be considered in determining the obviousness of an invention under 35 U.S.C. Section 103." MPEP § 2141.02 Applicant has provided a clear assertion of this discovery in the specification: "it has been discovered that adding a small amount of nitrogen during the endpoint stop prevents the notch without affecting selectivity." (page 5, lines 10-12) The use of nitrogen to prevent notching addresses a different objective than the endpoint identification of the prior art. Therefore, an artisan skilled in the subject matter of the '334 reference would not pursue reducing the amount of nitrogen through routine experimentation, as claimed, since such artisan is unaware of the objective of the instant application, and therefore has no reason (motivation) to pursue this objective.

With respect to the rejection of claims 1-7 and 8-21 and in view of the above, Applicant respectfully maintains that the rejection lacks the necessary motivation as is required when a rejection under 35 U.S.C. 103 is based on a combination of references. The Office Action acknowledges on page three that the '334 reference fails to teach the invention as a whole, including the performance of a second plasma etch that includes HBr and a small amount of nitrogen. In an attempt to overcome this deficiency, the Office Action alleges that one skilled in the art, in view of the '395 reference, would be

motivated to correspondingly modify the asserted teaching of the '334 reference since the '334 reference "uses a HBr/Cl₂ plasma in the second etching step used to etch the device layer ... in order to produce an expected result" and that the process parameters would be readily recognized by the skilled artisan. In view of the discussion above and the fact that Applicant's use of the nitrogen addresses a unique problem, it is Applicant's understanding that such evidence rebuts the Examiner's position that the alleged motivation would be present. Each of the other pending claims includes related subject matter also not previously recognized by the prior art and explained in the specification, e.g., at pages 10-12. For example, claim 3 is directed to about two percent of gas flow, claim 6 is directed to the use of a hardmask, claim 7 is directed to a selectivity booster; and since no mention is made regarding such aspects of the invention the necessary motivation is lacking for a *prima facie* case of obviousness.

In view of the remarks above, Applicant believes that each of the rejections has been overcome and the application is in condition for allowance. Should there be any remaining issues that could be readily addressed over the telephone, the Examiner is encouraged to contact the undersigned at (651) 686-6633.

Respectfully submitted,

CRAWFORD PLLC
1270 Northland Drive, Suite 390
St. Paul, MN 55120
651/686-6633

Dated: June 1, 2001

By: 

Robert J. Crawford
Reg. No. 32,122